

REMARKS

Reconsideration is respectfully requested.

By the above amendment, Applicants have amended independent Claims 1 and 3 to more clearly and specifically claim the subject matter considered to be Applicants' invention.

Specifically, the electrically conductive layer "the outer surface" of the column and of the upper substrate has been more clearly recited. This amendment more clearly sets forth the elements recited in the independent claims, and does not add any new matter.

It is respectfully submitted that the rejections of Claims 1-4 under 35 U.S.C. § 102(b) over Leupp et al. (U.S. Patent No. 3,978,580) are each improper because this reference fails to disclose teach or show all of the limitations recited in the claims. The present invention is claimed as providing a supporting column that is extended vertically to a portion of the color filter of the upper substrate and is formed in the same position with the connect hole formed in the common line of the lower substrate so that "a portion of the conductive layer is joined to the common line within the contact part," as it is formed on the outer surface of the supporting column and on the surface of the upper substrate, which is joined to the common line and the supporting column through the contact hole "so as to establish a signal interconnection between the lower substrate and the upper substrate" (emphasis added).

In contradistinction, the supporting column of the presently claimed invention is extended vertically to a portion of the color filter of the upper substrate and is formed in the same position with the connect hole formed in the common line of the lower substrate so that a portion of the conductive layer is joined to the common line within the contact part as it is formed on the outer surface of the supporting column and on the surface of the upper substrate, which is joined to the common line and the supporting column through the contact hole so as to establish a signal interconnection between the lower substrate and the upper substrate.

In contradistinction, Leupp et al. (U.S. Patent No. 3,978,580), disclose that the supporting column is extended vertically to the upper substrate on the lower substrate and the conductive layer is disposed between the upper substrate and the lower substrate including the supporting column. Leupp et al. also disclose that the insulating layer 25 is extended so as to isolate the lower and upper substrates. In addition, the anodized aluminum layer 35 is used as a mask to etch a portion of the insulating layer 25.

Accordingly, the supporting column of the present invention is different from that of disclosed in Leupp et al. in the region being extended, and, the conductive layer of the present invention functions differentially from the anodized aluminum layer 35 disclosed in Leupp et al.

Significantly, and as recognized in the Official Action at page 4, numbered section 7, last paragraph, Leupp et al. disclose "an insulating layer 25." Thus, the final product, the LCD shown by Leupp et al., for example, at Figs. 4 and 13, indicates the insulating oxide layer 25 as extending so as to separate, and electrically isolate the lower and upper substrates. This conforms with the use of the anodized aluminum layer 35, by Leupp et al., "as a mask," rather than to provide an electrical connection as required by the recitations in Claims 1 and 3. Additionally, aluminum, even when anodized, does not provide a good electrical conductor to provide the recited interconnection. Since at least these elements are missing from the cited references, it is respectfully suggested that the anticipation rejections under 35 U.S.C. § 102(b) are improper.

Claims 1 and 2 are alternatively rejected under 35 U.S.C. § 103(a) over Fujimura et al. (U.S. Patent No. 5,973,763), in view of Watanabe et al. (U.S. Patent No. 6,573,969), where Fujimura et al. is relied upon as teaching a contact part provided for a common line, as claimed, and Watanabe et al. is relied upon for teaching an electrically conductive layer formed on the outer surfaces of the supporting column and the upper substrate.

In respect to the subject matter for which it is relied upon, previously cited Fujimura et al. disclose that the supporting column is extended vertically to the upper substrate and the lower substrate including the supporting column. In contradistinction, the supporting column of the present invention is extended vertically to a portion of the color filter of the upper substrate and is formed in the same position with the connect hole formed in the common line of the lower substrate so that a portion of the conductive layer is joined to the common line within the contact part as it is formed on the outer surface of the supporting column and on the surface of the upper substrate, which is joined to the common line and the supporting column through the contact hole so as to establish a signal interconnection between the lower substrate and the upper substrate.

The supporting column of Fujimura et al. is extended vertically to the substrate on the lower substrate, more particularly to the outer surface of the seal. Also, the conductive layer is formed only on the upper substrate, which is different from that of the presently claimed invention, which is formed on the outer surface of the supporting column and the surface of the lower substrate, which is joined to the common line and the supporting column through the contact hole so as to establish a signal interconnection between the lower substrate and the upper substrate.

The supporting column of Watanabe et al. (including spacer bodies 29 and spacer electrodes 33) and the conductive pattern 34 are formed on the upper substrate. The conductive pattern 34 is spaced from the common electrode 23 rather than to provide an electrical connection. In addition, Watanabe et al. fail to teach establishing a signal interconnection between the lower substrate and the upper substrate as claimed in the present invention. Accordingly, the presently claimed invention cannot be regarded as being obvious, as asserted, by making simple alterations to the teaching of the cited references, as needed. Doing so is a

case of impermissible hindsight reasoning.

Therefore, the supporting column of Fujimura et al. is different from that claimed by the present invention, which is formed in the same position with the contact hole formed in the common line of the lower substrate. In addition, the conductive layer of Fujimura et al. is formed just on the upper surface of the supporting column, which is a distinguishing feature from the conductive layer of the presently claimed invention that recites connecting the supporting column and the common line through the contact hole (emphasis added).

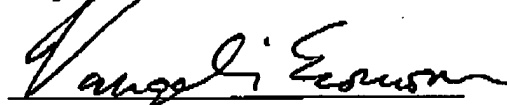
With respect to Watanabe et al., the invention described therein relates to an active matrix type liquid crystal display, which includes spacer bodies and spacer electrodes. However, Watanabe et al. fails to teach that a portion of the electrode, comprising the electroconductive layer is "joined to the common line within the contact part," as recited in Claim 1. Additionally, there is no teaching or suggestion to combine the teaching of Fujimura et al. and Watanabe et al., and any such combination is respectfully considered to be hindsight reasoning occasioned by the present invention. Since at least these elements are missing from the cited references, it is respectfully suggested that the rejections under 35 U.S.C. § 103(a) are improper.

Claims 3-5 are alternatively rejected as being obvious over Fujimura et al. in view of Ishikawa et al. Fujimura et al. is relied upon for the subject matter as above in the rejection of Claims 1 and 2, and Ishikawa et al. is relied upon as teaching the method of manufacture of the device taught therein. However, it is noted that Ishikawa et al. fails to teach a conductive layer over the support, as claimed. Additionally, no teaching or suggestion is found in Ishikawa et al. that would provide any incentive to deviate from the method taught by Ishikawa et al. in order to result in the device that is claimed by the present invention. It is respectfully submitted that the rejection is a product of impermissible hindsight reasoning.

Although Ishikawa et al. disclose that the supporting column 14 is formed on the upper substrate 2, the supporting column is connected to the lower substrate 3 and to the insulating layer 26. In addition, the conductive layer 16 is formed between the supporting column 14 and the insulating layer 26. This is a distinguishing feature that is indicative of the failure of the Ishikawa et al. reference to provide any additional information that would make Claims 3 and 5 obvious.

For the above reasons, it is considered that the claims, as amended, find support in the prior art application specification as filed, and that the combination of elements recited in the pending claims, as amended, distinguish over the references of record. Accordingly, an indication of allowable subject matter is earnestly solicited.

Respectfully submitted,



Vangelis Economou -Reg. No. 32,341

c/o Ladas & Parry

224 South Michigan Avenue - Suite 1200

Chicago Illinois 60604

Tel. No. (312) 427-1300

April 8, 2004